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13. ABSTRACT *(Maximum 200 words)*

This instrumentation project involved the purchase of a high-resoluation six-pass tandem Fabry Perot interferometer, a 200 nW frequency-doubled Nd:YAG laser, a custom-designed UHV chamber, a cryogenic sample manipulator, and associated vacuum hardware for interfacing this chamber with the MBE system. Therefore, we have completed all of t;he design, purchasing, and construction of the equipment needed to complete this project and add the BLS capability on our existing AFM/STM MBE system.

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Final Technical Report on AFOSR/DURIP grant # F496209010147: "*In situ* high sensitivity Brillouin Light Scattering Spectrometer for MBE-grown thin films"

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August 2001

Objective of effort:

To integrate *in situ* Brillouin Light Scattering (BLS) with our existing UHV AFM/STM MBE system, creating a new facility for correlating physical structure with magnetic properties in technologically important magnetic thin film materials.

Status of effort:

This instrumentation project involved the purchase of a high-resolution six-pass tandem Fabry-Perot interferometer, a 200 mW frequency-doubled Nd:YAG laser, a custom-designed UHV chamber, a cryogenic sample manipulator, and associated vacuum hardware for interfacing this chamber with the MBE system. We first purchased the laser, interferometer, magnet, and ancillary optics, which replaced the equipment on loan from Asahi-Komag. Following this we designed the custom vacuum chamber to allow optical access to the sample for BLS and Kerr effect measurements, and sample transfer to the MBE system. These vacuum components have all been received, assembled, and tested. Therefore, we have completed all of the design, purchasing, and construction of the equipment needed to complete this project and add the BLS capability on our existing AFM/STM MBE system.

Personnel Supported:

Charles M. Falco
David J. Keavney

Presentations at Meetings:

Poster Presentations at Spintronics 1999 in White Plains, NY and Spintronics 2000 in Sedona, AZ